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ABSTRACT

This paper reports on the findings of a two-part study undertaken to determine how teacher education programs prepare preservice teachers to use technology in their instruction and to determine the influence of the decade of initial teaching degree on a teacher's willingness to use technology. The teacher education faculty from four institutions in Pennsylvania and West Virginia with teacher education programs were surveyed to determine the method of technology introduction currently being used. In the second part of the study, teachers from a small Pennsylvania school district were surveyed to determine the decade of initial teaching degree and the technology that these teachers were using in the classroom. According to the results, the decade of initial teaching degree is not a sound indicator of a teacher's willingness to use technology. (Contains 13 references.) (Author/MES)

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Programs That Prepare Teachers to Integrate Technology Into Instruction In Meaningful Ways: How Successful Are They?

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Abstract: This paper is a report on the findings of a two-part study undertaken to determine how teacher education programs prepare pre service teachers to use technology in their instruction, and to determine the influence of decade of initial teaching degree on a teacher's willingness to use technology. The teacher education faculty from four institutions with teacher education programs were surveyed to determine the method of technology introduction currently being used. In the second part of the study, teachers from a small Pennsylvania school district were surveyed to determine the decade of initial teaching degree and the technology that these teachers were using in the classroom. According to the results of this study, decade of initial teaching degree is not a sound indicator of a teacher's willingness to use technology.

Introduction

Throughout the country, teacher education programs have been undergoing a restructuring process that is, in part, aimed at preparing students to teach in the twenty-first century (Barker, Helm & Taylor, 1995). Efforts are being made to provide future teachers with the expertise that they will need to use the technological resources that have become available in recent years. Among these new technologies are audio, video, computers, telecommunications, distance learning, and multimedia. As additional research is presented citing the benefits of technology on teaching and learning, it has become increasingly important for teachers to have exposure and experiences that will lead to their competence in these areas.

Review of Research

Resent research has shown that many areas of education can benefit from new technologies. Johnston (1997) completed a study of the changes in verbal abilities of kindergarten students when exposed to interactive CD ROM storybooks. He demonstrated that when these storybooks were used with students for as little as 50 minutes per week, their verbal abilities improved. In 1989, Reed was able to show how composing process software could improve the quality a student writer's creative writing. Later, in "The Effect of HyperCard Authoring on Knowledge Acquisition and Assimilation", Reed and Rosenbluth (1992) determined that students creating HyperCard programs showed dramatic increases in their ability to interrelate knowledge. In a later study, Higgins (1996) determined that the use of hypermedia study guides was an important factor in the retention of factual and inferential information presented to remedial students. Research into specific technologies, such as speech recognition computers, has shown promise when used with learning disabled students (Wetzel, 1996) and programs such as KidPix and Writing Center have been effective in helping even very young children with the task of creative writing (Wetzel & McLean, 1995). The area of mathematics has benefited from selected hypermedia programs that have been used successfully to improve mathematical problem-solving skills (Babbitt & Miller, 1996).

Beyond the findings of recent research, additional incentives to add technology to teaching programs have come about as a result of the National Council for Accreditation of Teacher Education (NCATE) concern for the state of technology programs being offered to the nation's teachers. NCATE, a national organization that accredits teacher preparation programs, suggests that "education schools should be required to incorporate technology into their programs in order to be accredited" (Bradley, 1997). As a result, more college and teacher education programs now include some form of computer training in their programs to satisfy this requirement for certification. Most teachers now exit the teaching programs with some knowledge of computers and technology and their various applications.

Generally, pre-service teacher education training programs are approaching this technology training in one of two ways. One approach, the competency model, offers students technology training in a core computer

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literacy course. Instructors with specific skills and computer knowledge teach these classes, and they have the advantage of being planned so those students will exit the class with predictable general technology skills. The other approach, the integration model, introduces the core course competencies within the methods and content courses. The integration of the technology is theoretically introduced in meaningful ways and is applied to the methods being taught. It is assumed that the instructors of these methods courses are competent users of the available technology (Wetzel, 1993).

Purpose of Survey

To determine how local teacher education institutions are introducing technology training, an informal e-mail survey was sent to teacher education faculty of four colleges and universities located in Pennsylvania and West Virginia. These institutions were chosen because they offer known teacher education programs and because the faculty e-mail addresses were readily accessible from the institution's WEB sites. When choosing the institutions to be included, an attempt was made to include schools with both large and small teacher education programs. This determination of size was made after comparing the number of faculty associated with each program. The larger programs were designated University #1 and University #2. The smaller programs were from College #3 and College #4.

In this survey, instructors were asked to respond to four questions. Question one asked the instructor to identify the classes he/she was currently teaching. The second question asked if a core computer course was required within the teacher education program. The third question asked the respondent if he/she included any technology training within the classes being taught, and the final question asked for an explanation of how technology was being integrated into the courses to make it a meaningful presentation.

Results

Responses to the survey were received from each institution. College #3 sent one reply that was initiated from the Dean and was meant to be a statement of college policy regarding computer and technology. The other three all gave detailed and individual information about their teacher education programs and how technology was being integrated into their classrooms. Eleven individual replies were received from University #2, two were received from College #4, and eleven were received from University #1.

From these survey returns, the following information was gathered: University #2, College #3 and College #4 each presents technology directly through the use of required courses. They rely on the competency model of computer and technology training for their instruction in these areas. Though they represent different regions and are of varying sizes, they have chosen the same model for this instruction.

University #1 is the only one of the four surveyed institutions using the integration model of computer and technology training within the teacher education program. This university is the largest of the surveyed institutions with an undergraduate enrollment of approximately 15,000 students. At University #1 technology is introduced within the education classes being taught, following the integration model. Instructors introduce and present technology applications from within the methods and content courses. Most, but not all of these classes have some requirements that students use word processors, and many of the instructors use e-mail with students on a regular basis. However, while this integration of technology is a mandatory inclusion in the program, not all faculty are at ease with computers and the requirement to include computer technologies into the curriculum is apparently often ignored.

TECHNOLOGY AND THE PUBLIC SCHOOL

Some of the nation's school districts, recognizing the need to train computer literate students, have spent millions of dollars to bring technology to the classroom (Torcian, 1998). However, this massive expenditure on hardware may be ill spent if it is not used correctly or to its full capacity. Education Week (Coley, 1997) reported that currently the use of computers in classrooms is meager, and that many students in American public schools spend less than an hour a week (or 2%-3% of instructional time) at the keyboard. This article continued by pointing out that the computer applications commonly used are unimaginative and often inappropriate, and are usually limited to word processing and remediation activities. Even among the schools that have adequate multimedia capability, it is unusual to find schools that are using technology for much more than "drill and practice" exercises. Wetzel (1993) claims that at least from a holistic view, "drill and practice" is actually an inappropriate use of computer technology. Yet, this is usually the primary emphasis of many

computer programs and is the main purpose for Title I programs that supply computer technology for remediation (Coley, 1997).

The Minnesota Department of Education addressed the question of computer competency of public school teachers after conducting a statewide survey of teachers that pointed out that few teachers had any more than the "most rudimentary computer skills" and were unable to pass on any computer knowledge to their students (West, 1990). Despite their lack of computer skills, the survey also showed that these teachers were curious about how to use technology in more effective ways. The survey also indicated that short term training programs for teachers were ineffective and that teachers needed five or more years of experience with computers before they began to use them for more than the most basic instructional applications (West, 1990).

The inability to use the technology creatively is often blamed on the lack of teacher training and the hesitancy of the classroom teacher to use the hardware and software available to them in appropriate ways. Possibly, older teachers who never received technology training lack the skills necessary for creative integration. Currently, new teachers are being taught many of these skills within their teacher education programs (Fulton, 1998). These programs now recognize the need for technology training and are making efforts to include this knowledge, but many new teachers still exit the programs unwilling to use technology for any but the most basic uses. Wetzel (1997) suggested that teacher education programs are at fault and that the method of instruction should be a combined form of the integration and the competency models rather than the current trend of using only one model. He believes that the core classes are needed to teach students basic skills but that the integration model is necessary for prepare students to integrate technology into their classrooms.

The Study

The second part of this study was undertaken to determine how teacher descriptions of their use of technology in the classroom vary according to the decade in which they were certified to teach. In an attempt to answer this question, a survey was developed to explore attitudes related to computer use of teachers in a small school district in Pennsylvania. Following administrative approval the survey was distributed to teachers in a small Western Pennsylvania school district. This district is comprised of eight schools. Five of the schools are located in rural areas and the remaining three are within the city limits.

The questions in the survey pertained to the use of technology in the classroom, personal feelings about computer technology, and how technology is being integrated into the instruction. Specifically, the survey was designed to determine the year of original teaching degree, the teacher's familiarity with computers and other technology, the instruction they had received from college or university courses into the uses of technology, and ways in which they were able to apply technology within their own teaching situations. The results were tabulated to provide information in two ways. District totals for all teachers were counted to determine overall technology usage and then these counts were separated according to the decade of the teacher's original teaching degree.

Data Collection and Analysis

The survey and a stamped, self addressed, return envelope were distributed to 235 teachers in the district. One hundred twenty-three (52%) of the surveys were returned by the cut off date indicated. All were usable for tally purposes and 84 (68%) included comments that were useful in determining actual computer and technology usage within the classroom.

Teachers who had graduated within the past 8 years comprised the most recent graduate group and it was determined that this group would be the most helpful in determining how teaching programs currently train students. Therefore, all questions were divided into groups representing information from teachers graduating within ten-year time frames. Also, the year of original teaching degree was used as an indicator of the age of the teacher. Dates of original degrees ranged from 1962 to 1997, and were divided into decade groups for comparisons. Interestingly, fifty percent (N=62) of the respondents received their degrees between 1970 and 1979 and only eleven percent (N=14) had graduated within the past eight years. Responses to remaining survey items were tallied and percentages were calculated.

Year of Original Degree	Respondents	Percent of Total
1962- 1969	37	30%

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1970- 1979	62	50%
1980-1989	10	08%
1990-1998	14	11%

Results

Fifty-five percent of the surveyed teachers indicated that they had used computer applications or instructional technology in their classroom in the 1998-99 school year. There was little difference between those who had graduated in the 1960s and those who were recent graduates in this specific area. Fifty nine percent of the 1962-1969 graduates had used computers or instructional technology, and fifty seven percent of those graduating between 1990 and 1997 reported using it. For the most part, the actual technology used was the TV/ VCR, (62%) but thirty seven percent indicated that they included word processors, twenty five percent used instructional software, twenty-two percent used drill and practice software, and twenty-one percent reported using video presentations. Almost exclusively, the technologies used could be considered passive learning experiences, meaning those experiences that required no construction of knowledge by the student.

When teachers were asked about their personal computer use, sixty-nine percent indicated that they have a computer in the home. When broken down into decade of original teaching degree, there was very little difference in percentages between those graduating in the 1960s and those more recent graduates about which group was more likely to own a computer. When asked about how they rated their proficiency with computers, sixty-one percent rated themselves as beginner or novice users, twenty-nine percent indicated that they were intermediate users, and the remaining nine percent rated themselves as advanced or expert users. One failed to respond. When these numbers were broken down by decade of original degree, the percentages were much the same, with no one age group rating themselves as more proficient than the overall average. There was however, a noticeable difference between decades when answering this question about attitudes towards technology. Twelve percent of the teachers admitted to hating or barely tolerating computers, thirty-six percent rated them as OK, and fifty percent stated that they liked or loved using computers. The 1962-1969 graduates reported that forty-six percent of them liked or loved computers, but the 1990-1997 graduates reported that sixty-four percent had the same attitude. Those more recent graduates were more likely to like or love computers, when compared to those who had graduated in the 1960s or 1970s.

The questions about computer classes taken and feelings about preparation for using computers and technology in the classroom may be related to why teachers are not using these technologies in the most appropriate ways. These questions showed that the percentage of those taking a college level computer class has risen from thirty-eight percent of the 1962-1969 graduates, to ninety-two percent for the 1990-1997 graduates. It also points out that only 50% of those 1990-1997 graduates rate their college or university experience as having prepared them to integrate technology into their classrooms.

Discussion

This survey indicated that eighty percent of the teachers in this district received their initial teaching degrees between 1962 and 1979 and only twelve percent of them have graduated within the past seven years. If initial degree can be used as an indicator of approximate age, over all, the teachers in this district are between the ages of 40 and 55. Therefore, most received their teacher training before computers and other current technologies were included in the teacher training programs. Only thirty -three percent of those 99 who graduated between the years 1962 and 1979 reported having ever taken a college level technology or computer class. Surprisingly, though few had any college level classes in computers, there was very little difference in their reports of technology use within their classrooms when compared to the more recent graduates.

The possible conclusion drawn from this survey is that age of the teacher, as determined by date of college graduation, may have little to do with how likely the teacher is to use technology within the classroom. Also, age seems to have little bearing on how users rate themselves in computer proficiency, or how likely they are to have a computer in the home. Age does appear to be related to rating personal interest in computers. Age may also be related to how individuals feel about their college training in preparing them to integrate technology into their instruction. Of those graduating in the 1960s, only eight percent stated that they have been adequately prepared, while fifty percent of the most recent graduates feel prepared. Those more recent graduates are also far more likely than their older colleagues to indicate that they enjoy using computers. If the results from these surveys can be taken as an indicator, it appears that teacher education programs may have little effect on a teacher's willingness to use computers and other technologies within the classroom.

Interestingly, those teachers graduating in the 1960s were more likely to rate themselves as using computers in meaningful ways in their instruction than those who had graduated within the past ten years. (59% vs. 36%)

The most meaningful and insightful parts of this survey were gathered from the handwritten notes that many respondents attached. From examining these notes it was determined that many teachers attributed the inaccessibility of computers and other technology for their failure to use them in meaningful ways. Many responded that the technology was not available to them or was not available in sufficient numbers to be useful. Two teachers actually reported that they had computers in their rooms but that they were still in the box. One explained that only "certain people" were permitted to remove and set up the computers and that those persons were not yet available to them. Teachers also wrote about inadequate training in the use of available technologies, lack of priority for computers and other equipment being included in the budget, lack of time within the school day for including computer usage, and a lack of priority by the school district in recognizing the importance of the role of technology in education. Another complaint reflected in the handwritten notes was that technical help was not available for keeping the equipment maintained and in operating order. The overall feeling gathered from these surveys was that budget constraints largely determined the minimal integration of technology for other than remedial and passive learning situations.

REFERENCES

Babbitt, B. C. & Miller, S. P. (1996, July 1). Using hypermedia to improve the mathematics problem solving skills of students with learning disabilities. Journal of Learning Disabilities, 29, 391-401.

Bradley, A. (1997, September 17). NCATE told to emphasize technology. Education Week on the Web. [On-line] Available at http://www.edweek.org.

Coley, R. J. (1997, May 21). Inequalities in access to technology documented. Education Week on the Web. [On-line] Available at http://www.edweek.org.

Fulton, K. (1998, February 1). Learning in a digital age: Insights into the issues. THE Journal (Technological Horizons in Education), 25, 7.

Johnston, C. B. (1997). Interactive storybook software: Effects on verbal development on kindergarten children. Early Childhood Development and Care, 132, 33-44.

Peterson, N. K., & Orde, B. J. (1995, February 1). Implementing multimedia in the middle school curriculum: Pros, cons and lessons learned. THE Journal (Technological Horizons in Education), 22, 70-76.

Reed, W. M. (1989). The effectiveness of composing process software: An analysis of writer's helper. Computers in the Schools, 6 (1/2), 67-81.

Reed, W. M., & Rosenbluth, G. (1995). The effect of Hypercard authoring on knowledge acquisition and assimilation. Computers in Human Behavior, 11(3/4), 618.

Toroian, D., & Volland, V. (1998, September 17). Schools face challenge getting teachers to use computers effectively. St. Louis Post Dispatch. pp B1.

West, P. (1990). Teachers' computer skills self taught, not a result of training, survey finds. 1990 Editorial Projects in Education.

Wetzel, K. (1993). Teacher educators' uses of computers in teaching. In D.Carey, R.Carey, D.Willis (Eds) Technology and Teacher Education Annual 1993. (pp. 407-410). Charlottesville, VA: Association for the Advancement of Computing in Education.

Wetzel, K. (1996, July 1). Speech recognizing computers: A written communication tool for students with learning disabilities? Journal of Learning Disabilities, 29, 371.

Wetzel, K., & McLean, S. V. (1995) Teaching early childhood language arts and technology: A creative integration. Retrieved from the World Wide Web: http/www.coe.uh.edu/insite/elec_pub/html1995/057.htm.

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